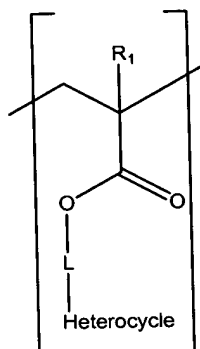


# CLAIMS

1. A fuel composition comprising  
(i) a fuel; and  
5 (ii) a polymeric compound;  
wherein the polymeric compound comprises at least one monomer unit of Formula I

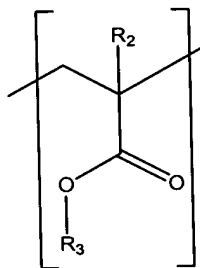


Formula I

wherein  $R_1$  is H or a  $C_{1-10}$  hydrocarbyl group;  
wherein L is an optional  $C_{1-30}$  hydrocarbyl linker group; and  
wherein heterocycle is an optionally substituted heterocyclic ring.

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2. A fuel composition according to claim 1 wherein the polymeric compound further comprises at least one monomer unit of Formula II

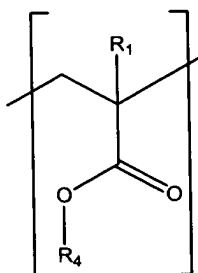


Formula II

wherein  $R_2$  is H or a  $C_{1-10}$  hydrocarbyl group; and  
wherein  $R_3$  is a  $C_{1-30}$  hydrocarbyl group.

15

3. A fuel composition according to claim 1 or claim 2 wherein the polymeric compound further comprises at least one monomer unit of Formula III



Formula III

wherein  $R_1$  is H or a  $C_{1-10}$  hydrocarbyl group; and  
 wherein  $R_4$  is a  $C_{2-10}$  unsaturated hydrocarbyl group.

4. A fuel composition according to any one of the preceding claims wherein the  
 5 heterocyclic ring comprises at least one nitrogen.

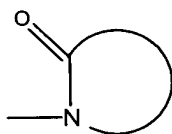
5. A fuel composition according to any one of the preceding claims wherein the  
 heterocyclic ring comprises at least one tertiary nitrogen.

10 6. A fuel composition according to claim 4 or 5 wherein the at least one nitrogen of the  
 heterocyclic ring has a bond to an atom of the linker group L.

7. A fuel composition according to any one of the preceding claims wherein the  
 heterocyclic ring comprises at least one amide functional group.

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8. A fuel composition according to any one of the preceding claims wherein the  
 heterocyclic ring is of Formula IV



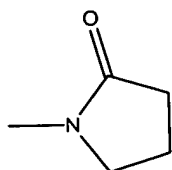
Formula IV

20 9. A fuel composition according to any one of the preceding claims wherein the  
 heterocyclic ring is a 4 to 10 membered ring.

10. A fuel composition according to any one of the preceding claims wherein the  
 heterocyclic ring is a 4, 5 or 6 membered ring.

25

11. A fuel composition according to any one of the preceding claims wherein the heterocyclic ring is of Formula V



Formula V

12. A fuel composition according to any one of the preceding claims wherein L is a C<sub>1-20</sub>  
5 hydrocarbyl linker group.

13. A fuel composition according to any one of the preceding claims wherein L is a C<sub>1-10</sub>  
hydrocarbyl linker group.

10 14. A fuel composition according to any one of the preceding claims wherein L is a C<sub>4-10</sub>  
hydrocarbyl linker group.

15 15. A fuel composition according to any one of the preceding claims wherein L is a  
hydrocarbon linker group.

16. A fuel composition according to any one of the preceding claims wherein L is a  
straight chained or branched hydrocarbon linker group having the formula (C<sub>x</sub>H<sub>2x</sub>)  
wherein x is an integer.

20 17. A fuel composition according to any one of the preceding claims wherein L is (CH<sub>2</sub>)<sub>4</sub>.

18. A fuel composition according to any one of the preceding claims wherein R<sub>1</sub> is H or a  
C<sub>1-5</sub> hydrocarbyl group.

25 19. A fuel composition according to any one of the preceding claims wherein R<sub>1</sub> is H or a  
hydrocarbon group.

20. A fuel composition according to any one of the preceding claims wherein R<sub>1</sub> is H or  
an alkyl group.

30

21. A fuel composition according to any one of the preceding claims wherein  $R_1$  is H or methyl.
22. A fuel composition according to any one of claims 2 to 21 wherein  $R_2$  is H or a  $C_{1-5}$  hydrocarbyl group.
23. A fuel composition according to any one of claims 2 to 22 wherein  $R_2$  is H or a hydrocarbon group.
24. A fuel composition according to any one of claims 2 to 23 wherein  $R_2$  is H or an alkyl group.
25. A fuel composition according to any one of claims 2 to 24 wherein  $R_2$  is H or methyl.
26. A fuel composition according to any one of claims 2 to 25 wherein  $R_3$  is a  $C_{1-25}$  hydrocarbyl group.
27. A fuel composition according to any one of claims 2 to 26 wherein  $R_3$  is a  $C_{5-25}$  hydrocarbyl group.
28. A fuel composition according to any one of claims 2 to 27 wherein  $R_3$  is a hydrocarbon group.
29. A fuel composition according to any one of claims 3 to 28 wherein  $R_4$  is a  $C_{2-5}$  unsaturated hydrocarbyl group.
30. A fuel composition according to any one of claims 3 to 29 wherein  $R_4$  is an unsaturated hydrocarbon group.
31. A fuel composition according to any one of claims 3 to 30 wherein  $R_4$  comprises a terminal carbon-carbon multiple bond.
32. A fuel composition according to any one of claims 3 to 31 wherein  $R_4$  is an ethenyl group.

33. A fuel composition according to any one of the preceding claims wherein monomer units of Formula I and/or monomer units of Formula II and/or monomer units of Formula III comprise at least 70% by weight of the polymeric compound.

5 34. A fuel composition according to any one of the preceding claims wherein the molecular weight ( $M_n$ ) of the polymeric compound is from 20,000 to 90,000.

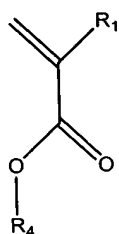
35. A fuel composition comprising

(i) a fuel; and

10 (ii) a polymeric compound;

wherein the polymeric compound is obtained or obtainable by a process comprising the steps of

(i) polymerising monomer A



Monomer A

wherein  $R_1$  and  $R_4$  are as defined in any one of the preceding claims; and

15 (ii) reacting the product of step (i) with compound C

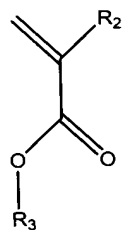


Compound C

wherein  $R_5$  is a  $C_{2-10}$  unsaturated hydrocarbonyl group; and

wherein heterocycle is an optionally substituted heterocyclic ring.

36. A fuel composition according to claim 35 wherein, in step (i), monomer A is  
20 copolymerised with monomer B



Monomer B

wherein  $R_2$  and  $R_3$  are as defined in any one of claims 2 to 35.

37. A fuel composition according to claim 35 or claim 36 wherein  $R_5$  is a  $C_{2-5}$  unsaturated hydrocarbonyl group.

38. A fuel composition according to claim 35, 36 or 37 wherein  $R_5$  is an unsaturated hydrocarbon group.

39. A fuel composition according to any one of claims 35 to 38 wherein  $R_5$  comprises a terminal carbon-carbon multiple bond.

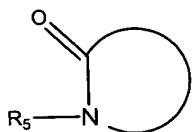
40. A fuel composition according to any one of claims 35 to 39 wherein  $R_5$  is an ethenyl group.

41. A fuel composition according to any one of claims 35 to 40 wherein the heterocyclic ring of compound C comprises at least one nitrogen.

42. A fuel composition according to any one of claims 35 to 41 wherein the heterocyclic ring of compound C comprises at least one tertiary nitrogen.

43. A fuel composition according to any one of claims 35 to 42 wherein the heterocyclic ring of compound C comprises at least one amide functional group.

44. A fuel composition according to any one of claims 35 to 43 wherein compound C is of Formula VI



Formula VI

wherein  $R_5$  is as defined in any one of claims 35 to 43.

45. A fuel composition according to any one of claims 35 to 44 wherein the heterocyclic ring of compound C is a 4 to 10 membered ring.

46. A fuel composition according to any one of claims 35 to 45 wherein the heterocyclic ring of compound C is a 4, 5 or 6 membered ring.

47. A fuel composition according to any one of claims 35 to 46 wherein compound C is N-vinylpyrrolidone.

48. A fuel additive composition comprising

- 5 (i) a polymeric compound as defined in any one of claims 1 to 47; and  
(ii) a metal deactivator and/or an antioxidant.

49. A fuel additive composition according to claim 48 comprising a metal deactivator and an antioxidant.

10

50. A fuel composition comprising

- (i) a fuel; and  
(ii) a fuel additive composition as defined in claim 48 or 49.

15 51. A fuel composition according to any one of claims 1 to 47 or 50 wherein the fuel is a jet fuel.

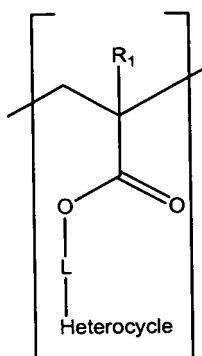
52. A fuel composition according to any one of claims 1 to 47, 50 or 51 wherein the polymeric compound is present in an amount of 15 to 30mg/L.

20

53. Use of a polymeric compound as defined in any one of claims 1 to 47 or a fuel additive composition as defined in claim 48 or 49, for

- (i) the inhibition of oxidation of a fuel composition as defined in any one of claims 1 to 47 or 50 to 52; and/or  
25 (ii) the inhibition of deposit formation in a fuel composition as defined in any one of claims 1 to 47 or 50 to 52; and/or  
(iii) the inhibition of particle formation from the oxidation product(s) of a fuel composition as defined in any one of claims 1 to 47 or 50 to 52; and/or  
(iv) the solubilisation of deposits and/or deposit precursors in a fuel composition as  
30 defined in any one of claims 1 to 47 or 50 to 52.

54. A method for inhibiting deposit formation in a fuel at a temperature of from 100 to 335°C, the method comprising combining with the fuel a polymeric compound comprising at least one monomer unit of Formula I



Formula I

wherein  $R_1$  is H or a  $C_{1-10}$  hydrocarbyl group;  
 wherein L is an optional  $C_{1-30}$  hydrocarbyl linker group; and  
 wherein heterocycle is an optionally substituted heterocyclic ring;  
 or a fuel additive composition as defined in claim 49 or 50.

5

55. A method according to claim 54 wherein the polymeric compound is as defined in any one of claims 2 to 34.

56. A fuel composition substantially as hereinbefore described with particular reference  
 10 to any one of the Examples.

57. A fuel additive composition substantially as hereinbefore described with particular reference to any one of the Examples.

15 58. A use substantially as hereinbefore described with particular reference to any one of the Examples.